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ABSTRACT

This paper, presented at the National Science Teachers Association conference in April, 1972, in New York City, describes a unique school (called a "magnet" school) designed for Dayton, Ohio. With open enrollment and adequate transportation, students will come from all parts of the city. The school will offer basic and required courses in all subject areas, as well as advanced science and mathematics courses, special mini-courses, and independent study providing continuous progress and self-paced learning. Students will be assisted in designing and conducting individual and small group research projects and will participate in a research seminar. Audio-tutorial programs have already begun in biology. Computer time-sharing service is already offered to students and will be developed in the center in a mathematics laboratory. In addition to other options, the program will offer a science materials laboratory where all Dayton teachers may have access to the use of specialized science equipment, laboratory space and materials not available in elementary schools and where teachers may swap science equipment and other materials. (Author/CP)

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THE SCIENCE MAGNET PROGRAM IN A LARGE CITY SCHOOL SYSTEM

National Science Teachers Association
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A magnet school, as its name implies is an attractive school and is designed for students of a school system with open enrollment. A magnet school, because of a special program or special facilities is intended to attract from all parts of the city, students with certain interests and abilities. It also attracts, sometimes from great distances, teachers with special interests and abilities.

A magnet school offers a program addressed specifically to the needs of certain children. But we may find few teachers able to teach in the specialized areas, or we may find that the program is so costly that the school system cannot justify establishing the program in more than one school; however, because of open enrollment, interested students from all parts of the city may participate in its program.

A study of the magnet school program concept for Dayton began about a year and a half ago. Ideas were culled by the science and mathematics teachers for the science and math magnet school which will be named the Science and Mathematics Advancement Center (SMAC). The school will offer all basic and required courses in all subject areas. In addition, it will offer advanced science and mathematics courses, specialized mini courses in science and mathematics, independent study pro-

SE 013 839

viding continuous progress and self-paced learning in science and mathematics. Students will be assisted in designing and conducting individual and small group research projects and will participate in a research seminar. Audio-tutorial programs have already begun in biology. Computer time-sharing service is already offered to students and will be developed in the center in a mathematics laboratory. An after-school science program for elementary and middle school students will be conducted mainly by high school students. Extended laboratory hours will be offered for high school student work. Ideas for a foreign travel and study program in science will be pursued. In addition, SMAC will offer a science materials laboratory where all Dayton teachers may have access to use of specialized science equipment, laboratory space and materials not available in elementary schools and where teachers may swap science equipment and other materials. The school will use our Research Division in pursuing science teaching research in this center.

Some of the courses to be offered in this school are: advanced placement biology, advanced placement chemistry, advanced placement physics, college physics (Wright State University courses Numbers 135, 136, 137), computer science, pre-medical college biology, problems in scientific research, intensive and independent study in science (Dayton Museum of

Natural History), college calculus (Wright State University courses Numbers 111, 112, 113), introduction to environmental studies (in cooperation with the University of Dayton), individualized continuous progress science and mini courses in such areas as oceanography, science in industry, space biology, modern science guest lectures, science careers, spelunking, report publishing, aviation ground school, slide rule use, simulation games and statistics.

SMAC plans were built from input of many sources including committee work originally designed for other reasons, city-wide interdisciplinary task force results, science and mathematics program funding proposals, observation visits in other school systems as well as much reading by numerous persons about specialized programs.

Plans include purchase of specialized supplies, equipment and facilities; specialized personnel for differentiated staffing teams, and as facilitators of audio-tutorial programs; university and other community resource persons, especially those with knowledge in the mini topics; student laboratory assistants; and community volunteer aids of various kinds. Plans also call for thorough in-service for teachers.

Of course the program will carry a price tag. We are searching for funding now. However, some money will be saved through consolidation of pupils from present small science and mathematics classes, differentiated staffing that may reduce substitute teacher requirements for teacher absence

and eventual reduction of some staff through audio-tutorial and other independent study programs.

Dayton's science magnet school program has been slow in evolving because the curriculum designer inherently involved in the development of it took a seven-month leave-of-absence just as plans began to take shape. It's been slow because schools were closed for a week last fall because of insufficient funds; the school board changed hands this year and policies have been affected; problems of segregation have plagued our schools and ironically distracted attention from part of the main cause of problems--needed curriculum change.

However, hope for a relative peace in Dayton schools glimmers ahead. The present school board has approved magnet course plans. SMAC, a magnet school design will have to emerge from individual magnet course offerings. The Board has adopted an open enrollment policy and is providing transportation to encourage participation. We think magnet courses will provide a more relevant and extended curriculum, will encourage a natural integration of students, will provide an interest incentive for teachers as well as for students and will make economical use of staff, equipment and facilities.

Single magnet courses are being designed by groups of teachers and curriculum development staff in nearly all

of our eleven high schools and a few of our fifty-seven elementary and middle schools. Proposed course designs described on a form provided by the department include rationale; goals; course description; sample student performance objectives; course outline; materials, equipment, facilities, staffing and budget requirements; and plans for evaluating the course. The course design must be approved by those who planned it, the principal of the school where the course is to be offered, supervisor of the subject area, supervisor of curriculum design and publications, the unit director and the assistant superintendent for curriculum development. The design is written on Dayton Public School Curriculum Publication No. 72-25.

These course designs are sent to our State Department where they receive final approval. Some of the magnet courses that will be offered next fall are listed in Magnet Programs in Dayton Public Schools, September, 1972, Curriculum Publication No. 72-29. We plan to offer individualized science in our Dunbar High School. This is a self-paced audio-tutorial program of studies in the sciences. Introduction to Environmental Studies currently offered in cooperation with University of Dayton personnel will be offered again next fall as a magnet course. It is an interdisciplinary approach to ecology through lectures, seminars, laboratory demonstrations and field trips on and off the University

campus. It is offered at the University to students from Dunbar, Roosevelt and Roth High Schools.

Environmental Studies will provide students who wish to attend Belmont High School, a study of ecosystems of the world; problems of air, water and soil pollution; wastes; recycling; and legal implications. Computer Science/Social Studies also will be offerd at Belmont. This course has no set curriculum. Students will use basic tools of research to study instructor-approved social and governmental problems. The course will strengthen computer programming knowledge and skills.

New magnet course designs are being turned in right and left. One magnet science course now being designed is called Individual and Intensive Science Study and will be offered at the Dayton Museum of Natural History and taught mainly by museum staff coordinated by a Dayton high school teacher from our Belmont High School. A Fairview High School teacher will teach the mechanics portion of a physics magnet course in cooperation with the museum's planetarium curator, and on certain days teacher and curator will conduct class studies in the museum's planetarium.

Development of the magnet program is an incentive for use of teacher creativity in course design. Central office staff spent most of the past week in our Stivers High School where we are struggling with severe segregation problems.

The school has been closed except to teachers and individual grade levels of students this past week. We are conducting various kinds of discussions with all students. One questionnaire we asked all students to answer was a request for magnet course ideas in all subject areas to make Stivers' curriculum more relevant for today's kids. Suggestions from the 1,250 students are not yet compiled, but a spinning through the questionnaires shows that many students are asking for mini courses in photography, cosmetology, jewelry making, the Bible as literature, black and white seminars, modern love stories, Karate and hot rod building. We will offer as many of the courses as feasible next fall. Courses will be offered to both transfer students and part-time students. Criteria for student enrollment in all courses will be only a student's serious interest.

Adversity at Stivers as elsewhere has its compensations. Progress is seldom come by without struggle. A school affecting behavior change must meet needs of today's youth. I have often quoted Gilbert Highet who said that one of the greatest motivating influences for youth is the tradition upon which our great old schools are built. If we refuse to face the fact that this is no longer true for most of today's youth, we completely miss the boat.

Through our magnet courses and eventually through our magnet schools, we in Dayton are rejecting reliance upon tradition and are building fine new schools that will enable

today's youth to live in today's world and meet today's problems.